TITLE OF THE INVENTION

GAMING MACHINE

Field of the Technology

[0001] The present invention relates to gaming machines and more particularly, to a gaming machine which can provide various displays.

Description of Related Art

[0002] Conventionally, gaming machines such as a pachi-slot machine, a slot machine, a pachinko machine and a video gaming machine provides various effects for the purpose of enhancing player's game amusingness.

[0003] In a conventional pachi-slot gaming machine, for example, a liquid crystal display unit is disposed in front of the machine aside from a plurality of rotatory reels, and game images associated with game contents are displayed on the display unit.

[0004] In an existing technique for displaying a line which becomes activated according to the number of inserted game medals, an electroluminescence (EL) lamp is used in pachi-slot machine.

[0005] For example, refer to Japanese Patent Laid-Open Publication No. 11-244453.

SUMMARY OF THE INVENTION

[0006] The above pachi-slot machine, however, has a problem that, since the plurality of rotatory reels are positioned away from the liquid crystal display

unit, a player likely misses a display based on the liquid crystal display unit when the player concentrates his attention on a display based on the rotatory reels, on the contrary, the player cannot enjoy her/himself in the display of the rotatory reels when he concentrates his attention on the display of the display unit.

[0007] An image is displayed on the liquid crystal display unit as associated with the display based on the rotatory reels. However, the image on the liquid crystal display unit is not displayed as combined with the variable display of symbols of the rotatory reels. For this reason, in order to enhance the gaming effect, some good contrivance is required. When the variable display of the symbols of the rotatory reels is combined with the display of a plurality of display units like an image on the liquid crystal display, various displays can be provided. Thus the exciting interest is increased and the game amusingness can be enhanced beyond the present level.

[0008] Even the other types of conventional gaming machines have such similar problems as mentioned above, and therefore development of a technique for increasing the gaming effect has been demanded.

[0009] The present invention is proposed in consideration of the above circumstances, and an object

of the present invention is to provide a gaming machine which can provide an interesting game presentation rich in idea.

[0010] In order to accomplish the above object, the gaming machine according to the present invention comprises game result display means for providing a predetermined display relating to a game result, game value providing means for providing a game value advantageous to a player when the predetermined game result is displayed on the game result display means, and display control means for executing display control of the game result display means, wherein the game result display means including first display means, second display means provided in front of the first display means when the gaming machine is viewed from a front side thereof, and third display means provided in front of the first display means when the gaming machine is viewed from the front side, a transparent display unit for transparently displaying the display of the first display means on the second display means, and a display shielding unit for shielding the display of the first display means on the third display means, and the display shielding unit is controllably switched to either of a state in which the display of the first display means is shielded or a state in which the display of the first display means is transparently

displayed.

[0011] In this case, the display shielding unit of the third display means may be provided at a position corresponding to the transparent display unit of the second display means.

[0012] A plurality of the transparent display units in the second display means and the display shielding units in the third display means may be provided respectively.

[0013] Further, the second and third display means may be integrally provided.

[0014] Furthermore, when giving a predetermined display relating to the game result in a region including the transparent display unit of the second display means, a third display control mean for controlling display of the third display means may control the display shielding unit to shield the display of the first display means so that a player hardly or cannot view the display of the first display means.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a pachi-slot machine in accordance with an embodiment of the present invention;

Fig. 2 shows schematically vertical cross-sectional views of a rotatory reel, a liquid crystal

display device and a liquid crystal shutter display device;

Fig. 3 shows schematically a vertical cross-sectional view of the liquid crystal display device;

Fig. 4 shows schematically a state of the liquid crystal display device when viewed from its front;

Fig. 5 shows schematically a vertical cross-sectional view of the liquid crystal shutter display device;

Fig. 6 shows schematically a state of the liquid crystal shutter display device when viewed from its front;

Fig. 7 shows a example of a display of the liquid crystal display device;

Fig. 8 shows light transmittable and shielded states of display shielding units 113a, 113b and 113c in an ordinary and shield mode respectively;

Fig. 9 shows another embodiment of a liquid crystal display device and a liquid crystal shutter display device;

Fig. 10 is a block diagram of a structure of a display control device;

Fig. 11 is a flow chart showing a procedure of image displaying operations in the display control device;

Fig. 12 is a flow chart showing a procedure of

main interrupt operations;

Fig. 13 is a flow chart showing a procedure of VDP interrupt operations;

Fig. 14 is a flow chart showing a procedure of synchronous interrupt operations;

Fig. 15 is a flow chart showing a procedure of timer interrupt operations; and

Fig. 16 shows an explanatory diagram of display examples on rotatory reels and the liquid crystal display device.

DETAILED DESCRIPTION OF THE INVENTION

[0015] Explanation will be made of an embodiment of a gaming machine according to the present invention.

[Basic Configuration of Gaming Machine]

The gaming machine according to an embodiment of the invention comprises following constituent elements, that is, game result display means for providing a predetermined display relating to a game result, game value providing means for providing a game value advantageous to a player when a predetermined game result is displayed on the game result display means, and display control means for controlling the display of the game result display means.

Here, the "predetermined display" relating to the game result means gaming effect, notification of game information, notification of a game result, etc.

[0016] The game result display means comprises first display means, second and third display means provided, respectively, in front of the first display means when the gaming machine is viewed from a front side thereof. The second display means and the third display means are provided in one-piece construction. The first display means is provided as a unit separated from the second and third display means so as to be spaced by a predetermined distance from the second and third display means other than the first display means.

[0017] The second display means has a transparent display unit for transparently displaying a display of the first display means, and the third display means has a display shielding unit for shielding the display of the first display means. Here, the number of such transparent display units or display shielding units is not especially limited but the units may be provided by one, two, three or any number. Further, how to arrange these units is not specifically restricted but various layouts of the units may be considered, including arrangement of the units by three in a column, by three in a row, and by three obliquely. The display shielding unit may be provided so as to bridge over a plurality of transparent display units. In this case, the display shielding unit can be arranged to have a surface area larger than that of the transparent

display unit. The display shielding unit is designed to be controllably shifted to either a state in which the display of the first display means is shield or a state in which the display of the first display means is transparently displayed.

[0018] In the gaming machine according to the embodiment of the invention, the display control means comprises first display control means for controlling the display of the first display means, second display control means for controlling the display of the second display means, and third display control means for controlling the display of the third display means.

[0019] The gaming machine according to the embodiment of the invention further comprises game start command means to be operated by a player and game start means for starting the game on the basis of an output of the game start command means. The gaming machine may further comprise winning combination determination means for determining a predetermined symbol combination as a 'winning combination' each time the game start means is operated, in which case a game result may be displayed on the basis of the winning combination determined by the winning combination determination means. The gaming machine according to the embodiment of the invention comprises game result deriving means for derive a game result according to

player's operation, in which case a display of the game result display means is controlled by the display control means based on an output of the game result deriving means.

[0020] The gaming machine according to the embodiment of the invention includes winning combination selection means for selecting one or more winning combinations from a plurality of winning combinations on the basis of the output of the game start command means, in which case the display control means is operated based on an output of the winning combination selection means.

[0021] An image displayed on the first display means under control of the first display control means may be superposed on an image displayed on the second display means under control of the second display control means, thereby displaying a gaming state.

Here, the first and second display means may be provided as separated units as spaced by a predetermined distance from each other.

In addition, the first and second display means may be provided in one-piece construction.

[0022] The first display means includes a plurality of symbol display units for variably displaying one or a plurality of images, which are capable of stopping.

[0023] The second display means has a transparent display unit for displaying a symbol displayed on the symbol display unit as associated with an area of the symbol display unit of the first display means. Here, the number of such symbol display units is not specifically limited but the units may be provided by one, two, three or a desirable any number. In addition, the number of symbols displayed on the symbol display unit is also not limited but the symbols may be provided by one, three in a column, three in a row, three obliquely or by any number. The second display means may be provided so as to bridge over a plurality of symbols. In the latter case, the second display means can be arranged to have a surface area larger than that of the first display means.

[0024] Also the gaming machine according to the embodiment of the invention is provided with forward illumination means for illuminating the first display means from the front side of the gaming machine and backward illumination means for illuminating the first display means from the back side of the gaming machine. Here, the forward illumination means or backward illumination means may be provided for each of the symbol display units.

[0025]

[Specific Examples of Individual Means]

Next, explanation will be made as to specific examples of the above respective means and the like. However, specific examples illustrated below are merely an example of each means of the gaming machine according to the invention, and the gaming machine of the invention is not restricted to the specific examples.

[0026] The aforementioned gaming machine may include any type of gaming machine such as a pachi-slot gaming machine, a pachinko machine (Industries Classes 1, 2 and 3), an arrange ball gaming machine, a mahjan gaming machine, a video slot gaming machine, a video poker gaming machine or a slot machine, so long as the gaming machine has a game result display unit to display a game result and function of controllably shifting the current gaming state to a state advantageous to the player when specific displays appear on the game result display unit.

[0027] The game result display means is a display device for displaying a game result, which includes a first, second and third display means. The game result display means may be any type of display device such as a CRT, an LCD, a plasma display, a 7-segment display, a dot matrix display, a lamp, an LED, a fluorescent lamp, an EL (electroluminescence) display, a rotatory reel, a rotatory disk display, a flexible LED, a flexible

liquid crystal display or a liquid crystal projector.

[0028] The game result displayed on the game result display means is that displayed according to the operation of the game start command means or the operation of the game result deriving means, which is displayed in the form of a still image, a motion image or a combination thereof. Concrete examples include a display of a specific symbol (such as "3" or "7"), a display of a combination of specific symbols (such as "777" or "776"), a specific symbol contained in a plurality of symbols (such as 'single cherry' or 'bipartite cherry'), and character information such as 'big prize', 'bonus', 'loss', 'big prize determined', 'bonus determined' and 'loss determined'. The game result in the case of a pinball gaming machine includes a display indicated when a game medium such as a game ball or coin enters or passes through a predetermined win opening.

[0029] A game value to be given by the game value providing means includes payout of a prize media (coins, medals or game balls) based on the winning of a predetermined symbol combination, predetermined writing to a game result memory medium (such as a magnetic card) based on the winning of a predetermined symbol combination, generation of a replay game, score addition, or generation of a state advantageous to the

player based on the winning of a predetermined symbol combination. Predetermined symbol combinations in the pachi-slot machine or the like include a small symbol combination for which a predetermined number of prize media are paid out, a single bonus for which the probability of determining a small symbol combination as a winning combination by the winning combination determination means is set to be high only during one game unit, a regular bonus for which the probability of determining a small symbol combination as a winning combination by the winning combination determination means is set to be high only during a plurality of game units, a big bonus for which the probability of determining a regular bonus as a winning combination by the winning combination determination means is set to be high only during a predetermined plurality of game units, a winning combination navigation function of informing the player of information about a winning combination determined by the winning combination determination means prior to player's operation of variable display stop command means, a push order navigation function of informing the player of information about a stop pattern selected by stop pattern selection means prior to player's operation of the variable display stop command means, a so-called CT (for example, refer to Japanese Patent Application

Laid-Open Publication No. 1989-238888) of stopping a symbol with a minimum movement or a substantially minimum variation in response to a stop command signal outputted by the player from the variable display stop command means, a replay for which the player can start gaming of one game unit without insertion of a game medium, and a replay high probability state for which the probability of determining a replay as a winning combination by the winning combination determination means is set to be high over one or a plurality of game units. And the winning combination navigation function, push order navigation function, CT, etc. may be allowed to continue over a plurality of game units. A winning combination discharge state in which winning types corresponding to predetermined symbol combinations or specific symbol combinations having been determined as a winning combination by the winning combination determination means and are not won yet are easily displayed, and a concentration state in which the possibility of a predetermined (or specific) symbol combination to be determined as a winning combination by the winning combination determination means is set to be high only during one or a plurality of game units, are included. A combination of the above forms and a state in which the length of the period of the above 'plurality of game units' is set to be long so that the

player become advantageous or not, are also included. Predetermined symbol combinations in a pachinko machine or the like include a big winning in which big winning means provided on a game panel to make entrance of a game medium ball eminently easier is opened or enlarged by a plurality of times, a small or middle winning in which the big winning means provided on a game panel is opened or enlarged once, a big winning in which variable winning means provided on a game panel to make entrance of a game medium ball easier is opened or enlarged once or by a plurality of times, and a lottery high-probability state in which a lottery probability of whether the big winning means is opened or enlarge is set to be high.

[0030] An advantageous state may be a state advantageous for a player, which continues during a plurality of game units. Advantageous states in the pachi-slot machines include a big bonus, a single bonus, a winning combination navigation function, a push order navigation function, a so-called CT, a replay high probability state, a winning combination discharge state and a concentration state. Advantageous states in the pachinko gaming machine include a big prize and a lottery high-probability state.

The advantageous state is sometimes referred to as bonus.

One game unit is a period from the output of the game start command signal from the game start command means until display of a game result or the like, and a plurality of game units means that the game unit is carried out by a plurality of times.

The winning means that a predetermined winning type corresponding to a predetermined symbol combination is displayed on the game result display means as a game result.

[0031] The game start command means refers, for example, to a start lever, a start switch, a bet switch ,or a switch for detecting an insertion of a game medium in the pachi-slot machine. In the pachinko gaming machine, the game start command means refers to a predetermined symbol start port, a predetermined symbol start gate or the like provided to the game panel.

[0032] The game start means refers, for example, to a control device for controlling the start of a game and a program for it.

[0033] The display control means refers, for example, to a display control device and a control program for it. The display control means comprises first, second and third display control means. Here, when the first display means is a rotatory reel, for example, the first display control means refers to a

control device for controlling the rotation and stoppage of the rotatory reel and to a control program for it. When the second display means is a liquid crystal display device, for example, the second display control means refers to a control device including a video processor or the like and to a control program for it. When the third display means is a liquid crystal shutter display device, for example, further, the third display control means refers to a control device including an ON/OFF control circuit for switching the liquid crystal shutter display device and to a control program for it.

[0034] The game result deriving means refers, for example, to a stop switch in the pachi-slot machine. In this case, the number of such stop switches is not specifically restricted.

[0035] The winning combination selection means refers, for example, to a control device for selecting 'winning' on the basis of random number lottery and to a control program for it. In this case, 'winning' includes various gaming states derived as results of the random number lottery such as 'miss' or 'replay'.

[0036] The first display means refers, for example, to a rotatory reel in a pachi-slot machine. Note that, during rotation of the rotatory reel, the stop switch sometimes fails to become valid based on predetermined

conditions.

[0037] The second display means refers, for example, to a liquid crystal display device. In this case, a predetermined region of the liquid crystal display device contains a transparent display unit which can transparently display the symbol display of the rotatory reel. That is, a region of the liquid crystal display device other than the transparent display unit has a diffusion unit for diffusing a light ray from backlights of the liquid crystal display device, while the transparent display unit has no such display unit.

[0038] The third display means refers, for example, to a liquid crystal shutter display device.

In this case, a predetermined region of the liquid crystal shutter display device includes a display shielding unit for shielding the aforementioned display of the first display means, e.g., the symbol display of the rotatory reel so as not to display it. And the display shielding unit is configured to be shifted to either of a state wherein the display of the first display means is shielded or a state wherein the display of the first display device is transparently displayed.

Note that, in addition to the first, second and third display means, another display means may be

included as the game result display means. The other display means refers, for example, to a bet number display unit, an effect exclusive rotatory reel, etc. in the pachi-slot machine.

[0039] The display of each display means is not limited to only visual display but may be realized in the form of a listening or sound display, a display based on the sense of smell, a display based on lamp turning on, or a combination thereof. When the display is realized in the form of a visual display, further, the display can be done by using color, pattern, shape or a combination thereof. When the winning probability or the like is displayed, its reliability can be changed. In this case, the reliability can be changed depending on the number of game media thrown in the game. That is, when the number of thrown game media is not smaller than a predetermined number, or when the number of credited game media is not smaller than a predetermined number, such effect can be given as increasing the reliability.

[0040] The forward illumination means refers, for example, to a lamp, an LED, etc. for illuminating the rotatory reel from the forward side of the gaming machine in the pachi-slot machine and pachinko gaming machine. The backward illumination means refers, for example, to a back lamp or the like for illuminating

the rotatory reel from its inner surface side in the pachi-slot machine and pachinko gaming machine.

[0041] The operation of each means can be constituted to be carried out on the basis of a predetermined lottery result. Further, the operational state of each means may be constituted to be set on the basis of the operation of a shop employee, the operation of the player, and the operation of a machine serviceman, etc.

[0042] A pachinko gaming machine as currently predominant one of gaming machines will be complementarily explained. The pachinko gaming machine as the currently predominant machine includes a game board for performing a game by shooting a game ball from a shooting device (not shown). The game panel has a substantially circular game section surrounded by a guide rail. Within the game section, a plurality of obstruction members such as obstruction nails and windmills, an image display device functioning as a special symbol display device for variably displaying a plurality of special symbols, an ordinary symbol display device incorporating two common symbol indication LEDs of red and green, a plurality of scoring slots, and an OUT port for discharging game balls not passed through any scoring slots out of the game section, are provide.

[0043] In addition, a special symbol start port (special symbol start gate) for starting variable display of symbols on the image display device making it condition that a gaming ball wins the port, and an ordinary symbol start port (ordinary symbol start gate) for starting variable display of the ordinary symbol display device making it condition that a gaming ball passes the port.

[0044] A big winning port is also provided, which is switched, when the stopped display state of the symbols on the image display device becomes a predetermined winning pattern, to a state (such as big winning, middle winning or small winning) in which the winning port tends to accept a game ball for a predetermined period of time and by a predetermined number of times more easily.

[0045] When a predetermined display result appears on the ordinary symbol display device, the special symbol start port (special symbol start gate) is opened or enlarged (e.g., winning state).

[0046] When the special symbol is a specific symbol (probability changing symbol), a so-called probability change game is carried out, in which the 'big winning' probability becomes high in a game after the special game is completed.

[0047] As for a specific symbol (probability

changing symbol), for example, symbols of odd numbers among 'big winning' symbols represented by numbers "0" to "11" becomes the specific symbol (probability changing symbol).

[0048]

[Appearance of Pachi-slot Machine]

Hereafter, explanation will be made in connection with a specific embodiment of the gaming machine according to the invention, by referring to the attached drawings. Although explanation will be made in connection with a pachi-slot machine as a representative gaming machine in the following embodiment, the present invention is not restricted to the specific gaming machine.

Fig. 1 is a perspective view of a pachi-slot machine according to an embodiment of the invention.

[0049] As shown in Fig. 1, the pachi-slot machine according to the embodiment of the invention includes three display windows 3a, 3b and 3c, to which each surface of three rotatory reels 2a, 2b and 2c disposed in a cabinet 1 of the game machine faces, are provided abreast on the cabinet 1 of the gaming machine at an upper side of a nearly center of the front face. In the lower side of the display windows 3a, 3b and 3c, a game medal insertion slot 4 for inserting game medals provided for the game, a bet switch 5 for inserting

game medals provided for the game in a credited range, a deposited-medal adjusting switch 6 for paying out the credited game medals, a start switch 7 for starting the rotation of the rotatory reels 2a, 2b and 2c at the same time, three stop switches 8a, 8b and 8c for individually stopping the rotation of the rotatory reels 2a, 2b and 2c and the like, are provided.

[0050] To the three display windows 3a, 3b and 3c, five activated line displays 9a, 9b, 9c, 9d and 9e are provided so as to traverse the display windows 3a, 3b and 3c. The activated line displays consist of the three transverse activated line displays 9b, 9c and 9d and the two oblique activated line displays 9a and 9e crossing them. The number of lines made activated varies with the number of game medals used for the game. On the left side of the display window 3a, three activated line lamps 10a, 10b and 10c are provided for displaying a correspondence relationship between the number of game medals used for the game and the activated line displays 9a, 9b, 9c, 9d and 9e. In front of the activated line lamps 10a, 10b and 10c, numerical characters such as "1", "2" or "3" are displayed to demonstrate clearly the number of inserted game medals and the activated line displays 9a, 9b, 9c, 9d and 9e as associated with the turned-on activated line lamps 10a, 10b and 10c. Further, at upper and

lower sides of the activated line lamps 10a, 10b and 10c, a plurality of display lamps 11a, 11b and 11c are provided for displaying game information on the pachi-slot machine. The display lamps 11a, 11b and 11c function as other display units. For example, the display lamps can be used to indicate various displays such as game medal insertion permission, game start permission, internal winning of bonus game, game prohibition and game close.

[0051] At the lower front side of the cabinet 1 of the gaming machine, a game medal payout opening 12 for paying out game medals and a game medal deposition tray 13 for depositing game medals provided so as to face the game medal payout opening 12, are provided. Also at the upper front side of the cabinet 1 of the gaming machine, a decorative section 14 and a pair of speakers 15a and 15b are provide.

[0052] Though not illustrated, a hopper for paying out game medals when a predetermined winning state is established, is provided in the cabinet 1 of the gaming machine.

[0053]

[Rotatory Reel]

The rotatory reels 2a, 2b and 2c are members which function as the first display means in the present embodiment and which are disposed by three in a

row. Each of the rotatory reels 2a, 2b and 2c is rotated by driving associated stepping motors or the like. Each of the rotatory reels 2a, 2b and 2c is made of a light transmitting material, and a light-transmitting reel tape (not shown) having a plurality of symbols marked thereon is applied onto the front surface of the reel.

[0054] Note that the number of such rotatory reels 2a, 2b and 2c are not limited to three but any number such as 2 or 4 may be employed. Further, the type of symbols given on the rotatory reels 2a, 2b and 2c is not specifically restricted, but various types of symbols such as "7", "BELL", "ORANGE", "CHERRY", JAC, "BAR", "PERSON", "ANIMAL" "FISH" or "VEHICLE" can be applied.

[0055] Referring Fig. 2, explanation will be made as to the rotatory reels 2a, 2b and 2c. Fig. 2 is a schematic diagram showing vertical cross-sectional views of a rotatory reel (2a is shown as a representative), a liquid crystal display device 16 and a liquid crystal shutter display device 112. As shown in Fig. 2, three backlights 17a, 17b and 17c are provided in the rotatory reel 2a to illuminate the rotatory reel 2a from its interior side. Note that the number of such backlights is not restricted to three but 1, 2, 4 or more backlights can be used according to

the number of symbols stop-displayed in the display window 3a. Lamps, LEDs or the like may be used as the backlights 17a, 17b and 17c.

[0056] At upper and lower forward sides of the rotatory reels 2a, 2b and 2c, forward illuminating devices 18a and 18b are disposed each by one to illuminate the liquid crystal display device 16 and liquid crystal shutter display device 112 from their back sides and illuminating the rotatory reels 2a, 2b and 2c from their front sides. As the forward illuminating devices 18a and 18b, for example, fluorescent lamps, lamps, LEDs or the like can be used. One forward illuminating device may be disposed at either upper or lower side instead of disposing a pair of 18a and 18b at both upper and lower sides.

[0057]

[Liquid Crystal Display Device and Switch Liquid Crystal Display Device]

The liquid crystal display device 16 and switch liquid crystal display device 112 function as the second and third display means respectively in the present embodiment.

As shown in Fig. 2, the liquid crystal display device 16 and liquid crystal switch display device 112 are disposed as overlapped with each other so that they are positioned on the front side of the rotatory reels

2a, 2b and 2c of the pachi-slot machine. In other words, as shown in Fig. 2, the liquid crystal display device 16 as the second display means and the liquid crystal switch display device 112 as the third display means are integrally provided.

[0058] Explanation will first be made as to the liquid crystal display device 16 as the second display means by referring to Figs. 3 and 4. Fig. 3 is a schematic diagram showing a vertical cross-sectional view of the liquid crystal display device 16, and Fig. 4 shows schematically the liquid crystal display device 16 viewed from its front side.

As shown in Fig. 3, the liquid crystal display device 16 includes a liquid crystal panel 19, a light guiding plate 20 and a reflecting plate 21, sequentially from the front side of the pachi-slot machine. At upper and lower sides of the light guiding plate 20, light sources 22a and 22b made of fluorescent lamps, lamps, LEDs or the like are provided.

[0059] As shown in Fig. 4, areas of the liquid crystal display device 16 corresponding to the display windows 3a, 3b and 3c of the rotatory reels 2a, 2b and 2c constitute transparent display units 23a, 23b and 23c which transparently display symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c. That is, a non-transparent region 24 other

than the transparent display units 23a, 23b and 23c has a diffusion portion for diffusing light rays emitted from the forward illuminating devices 18a and 18b, on the other hand, the transparent display units 23a, 23b and 23c have no such diffusion portion. The entire liquid crystal display device 16 is illuminated with light emitted from the light sources 22a and 22b disposed at the upper and lower sides of the light guiding plate 20. The transparent display units 23a, 23b and 23c in the liquid crystal display device 16 are made transparent or made by cutting out the reflecting plate 21 so as to prevent the reflecting plate 21 from reflecting light from the light sources 22a and 22b.

[0060] In the liquid crystal display device 16 of the present embodiment, symbols displayed on the rotatory reels 2a, 2b and 2c can be visibly observed through the transparent display units 23a, 23b and 23c, and an effect image can be displayed on the entire display screen including the transparent display units 23a, 23b and 23c and non-transparent region 24.

[0061] Next, the switch liquid crystal display device 112 as the third display means will be explained with reference to Figs. 5 and 6. Fig. 5 shows a schematic vertical cross-sectional view of the switch liquid crystal display device 112, and Fig. 6 shows a schematic diagram showing a state of the switch liquid

crystal display device 112 viewed from its front side.

[0062] As shown in Figs. 5 and 6, the switch liquid crystal display device 112 has display shielding units 113a, 113b and 113c formed in an interface with the liquid crystal display device 16.

[0063] As shown in Fig. 6, the display shielding units 113a, 113b and 113c are located at positions corresponding to the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 in the switch liquid crystal display device 112. Accordingly, in the pachi-slot machine of the embodiment, as shown in Figs. 4 and 6, the transparent display units (23a, 23b and 23c) and the display shielding units (113a, 113b and 113c) are provided respectively by a plural number (three).

[0064] When the switch liquid crystal display device 112 is turned ON, all light from the backlights 17a, 17b and 17c and from the forward illuminating devices 18a and 18b are shielded by the display shielding units 113a, 113b and 113c. Therefore, the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 cannot transparently display the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means. On the other hand, when the switch liquid crystal display device 112 is turned OFF,

all the light emitted from the backlights 17a, 17b and 17c and from the forward illuminating devices 18a and 18b is allowed to pass in the display shielding units 113a, 113b and 113c. As a result, the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 can transparently display the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means. In this case, the switch liquid crystal display device 112 is arranged to be turned ON and OFF in each of the display shielding units 113a, 113b and 113c.

And when the liquid crystal display device 16 as the second display means provides a predetermined display relating to a game result in a region including the transparent display units 23a, 23b and 23c, a display control device 140 (to be explained later) as the third display control means controls the display shielding units 113a, 113b and 113c to shield the display of the first display means, whereby the player can hardly visibly observe the display of the first display means or cannot visibly observe it at all.

[0065] With such an arrangement as mentioned above, when a specific image is displayed in the liquid crystal display device 16 as the second display means as shown in Fig. 7 as an example, turning ON of the switch liquid crystal display device 112 simultaneously

with it causes the display shielding units 113a, 113b and 113c to shield light emitted from the backlights 17a, 17b and 17c and from the forward illuminating devices 18a and 18b. As a result, the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 cannot transparently display the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means. Accordingly since the specific image can be displayed while the player cannot observe the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c through the transparent display units 23a, 23b and 23c shown by two-dot dashed lines in Fig. 7; an effect display based on the highly beautiful and fine image can be realized.

[0066] In this case, in areas of the transparent display units 23a, 23b and 23c shown by the two-dot dashed lines in Fig. 7 in which the specific image is not displayed, the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c cannot be seen and, for example, a white ground display is given to the areas. The reason is as follows. The display shielding units 113a, 113b and 113c shield all the light emitted from the backlights 17a, 17b and 17c and from the forward illuminating devices 18a and 18b. However, as shown in Fig. 3, since the liquid crystal

display device 16 has the light sources 22a and 22b provided at the upper and lower sides of the light guiding plate 20, the light guiding plate 20 and the reflecting plate 21; the player can see the white ground based on light from the light sources 22a and 22b.

[0067] Fig. 7 shows an embodiment in which an image is displayed in an enlarged form when start operation is carried out, a specific symbol combination (e.g., RB) as an internal winning combination is determined and then the machine enters into a no-gaming state while failing to establish the RB winning.

[0068] In this example, a Don-chan 93 (character) with his arms folded is displayed on the liquid crystal display device 16 substantially all over. In the example of Fig. 7, a liquid crystal display device 160 as another second display means is provided at the lower front side of the gaming machine, and an image showing a lower body part 94 of the "Don-chan" 93 is displayed on the liquid crystal display device 160. In other words, the image displayed on the liquid crystal display device 16 and the image displayed on the liquid crystal display device 160 can be combined into a single still or motion image as a display (mutually associated images can be displayed).

[0069] In the example of Fig. 7, the liquid

crystal display device 160 as another second display means and a switch liquid crystal display device (not shown) as another third display means are disposed as overlapped with each other so as to be positioned in the front side of the pachi-slot machine with respect to three rotatory reels (not shown) as another first display means provided at the back side of the lower front side of the gaming machine. And the liquid crystal display device 160 as another second display means has transparent display units 163a, 163b and 163c, and the switch liquid crystal display device as another third display means has display shielding units (not shown) for shielding the displays of the three rotatory reels (not shown) at positions corresponding to the transparent display units 163a, 163b and 163c. In this way, an arrangement of providing the display shielding units in another location in the gaming machine is also possible.

[0070] In order to form the display shielding units (113a, 113b, 113c, etc.), a technique similar to a liquid crystal display system for electrically switching between two- and three-dimensional displays based on a so-called parallax barrier system is used in the embodiment.

[0071] The liquid crystal display system uses the parallax barrier system known conventionally, and

includes a combination of a TFT (thin film transistor) liquid crystal display and a switch liquid crystal. The switch liquid crystal can provide an optical parallax barrier to control the traveling direction of light and separate the light into different light beams each of which reaches left or right eye. In other words, in the two-dimensional display mode, the switch liquid crystal causes the parallax barrier to be turned OFF, so that light passes therethrough and reaches player's left and right eyes as the same light, whereby the player can see a two-dimensional image. In the three-dimensional display mode, on the other hand, the switch liquid crystal causes the parallax barrier to be turned ON, so that light is separated into two rays and each of the separated light rays reaches left or right eye, whereby a three-dimensional image can be seen (stereoscopically).

[0072] As a principle of such a liquid crystal display for electrically switching between two- and three-dimensional displays, it is considered, for example, to electrically control the orientation direction of liquid crystal molecules in such a manner that, in an ordinary mode, light is allowed to pass through all the surfaces of the display shielding units 113a, 113b and 113c as shown in Fig. 8(a); and that , in the shield mode, a barrier is formed not to allow

light to transmit by all the surfaces of the display shielding units 113a, 113b and 113c, as shown in Fig. 8(b).

[0073] As has been explained above, in the aforementioned liquid crystal display device 16, the symbols drawn on the rotatory reels 2a, 2b and 2c can be visibly seen through the transparent display units 23a, 23b and 23c, and an effect image can be displayed on the entire display screen including the transparent display units 23a, 23b and 23c and the non-transparent region 24. In the liquid crystal shutter display device 112, further, the display can be shielded by the display shielding units 113a, 113b and 113c, so that the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means can be prevented from being transparently displayed.

[0074]

[Other Embodiments of Liquid Crystal Display Device and Liquid Crystal Shutter Display Device]

By referring to Figs. 4 and 6 together with Fig. 9, explanation will be made in connection with other embodiments of the liquid crystal display device 16 and switch liquid crystal display device 112. Even in the embodiment, the liquid crystal display device 16 and the liquid crystal shutter display device 112 are

located to be positioned at the front side of the pachi-slot machine with respect to the rotatory reels 2a, 2b and 2c. Further, the liquid crystal display device 16 as the second display means and the liquid crystal shutter display device 112 as the third display means are integrally formed.

[0075] Fig. 9 shows schematically an exploded view of a detailed structure of the liquid crystal display device 16 and liquid crystal shutter display device 112 integrally formed in the embodiment.

Firstly, as shown in Fig. 9, to the liquid crystal display device 16, a liquid crystal panel 19, a diffusion portion (diffusion sheet) 29, a light guiding plate 20 and a reflecting plate 21 are disposed sequentially from the front side of the pachi-slot machine. Above and under the light guiding plate 20, light sources 22a and 22b such as fluorescent lamps, lamps or LEDs are disposed.

[0076] As shown in Fig. 4, in the liquid crystal display device 16, portions of the rotatory reels 2a, 2b and 2c corresponding to the display windows 3a, 3b and 3c are transparent display units 23a, 23b and 23c which can transparently display symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c. In other words, the non-transparent region 24 other than the transparent display units 23a, 23b and

23c has the diffusion portion (diffusion sheet) 29 for diffusing light rays emitted from the forward illuminating devices 18a and 18b; while, the transparent display units 23a, 23b and 23c have no such diffusion portion (diffusion sheet) 29. Further, the entirety of the liquid crystal display device 16 is illuminated by the light sources 22a and 22b disposed above and under the light guiding plate 20.

[0077] In the liquid crystal display device 16 according to the embodiment, the symbols displayed on the rotatory reels 2a, 2b and 2c can be visibly observed through the transparent display units 23a, 23b and 23c, and an effect image can be displayed all over the entire display screen including the transparent display units 23a, 23b and 23c and non-transparent region 24.

[0078] Explanation will next be made as to the liquid crystal shutter display device 112 as the third display means by referring to Figs. 6 and 9. As shown in Figs 6 and 9, the liquid crystal shutter display device 112 has display shielding units 113a, 113b and 113c for shielding the display of the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means.

[0079] As shown in Figs. 6 and 9, the display shielding units 113a, 113b and 113c are provided at

positions corresponding to the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 in the liquid crystal shutter display device 112. Accordingly, as shown in Figs. 4 and 6, the pachi-slot machine in accordance with the embodiment includes a plurality (three) of the transparent display units (23a, 23b and 23c) and a plurality (three) of the display shielding units (113a, 113b and 113c).

[0080] Note that a single display shielding unit may be provided at a position corresponding to the plurality of transparent display units. For example, the first display means can have three rotatory reels, three transparent display units may be provided as associated with the respective rotatory reels, and a single display shielding unit may be provided as associated with the three transparent display units. And the display shielding unit may be controllably switched to either a state in which a region of the single display shielding unit corresponding to the specific transparent display unit shields the display of the rotatory reels or a state in which the display of the rotatory reels is made transparent for display.

[0081] At this time, the display shielding unit may further include a non-transparent region of the second display means. In such cases, since the single display shielding unit may be provided for the

plurality of transparent display units, works such as assembly and exchange may be reduced in some cases.

Referring again to Fig. 9, explanation will be made as to the detailed structure of the liquid crystal display device 16 and liquid crystal shutter display device 112.

[0082] As has been explained above, in the liquid crystal display device 16, the liquid crystal panel 19, diffusion portion (diffusion sheet) 29, light guiding plate 20 and reflecting plate 21 are arranged sequentially from the forward side of the pachi-slot machine; and the light sources 22a and 22b such as fluorescent lamps, lamps or LEDs are disposed above and under the light guiding plate 20. That is, the liquid crystal display device 16 is configured so as to evenly guide light from the light sources 22a and 22b via the light guiding plate 20 and reflecting plate 21 to the diffusion portion (diffusion sheet) 29. In this case, even light emitted from the backlights 17a, 17b and 17c or from forward illuminating devices 18a and 18b is evenly guided to the liquid crystal panel 19 via the diffusion portion (diffusion sheet) 29.

[0083] In the liquid crystal display device 16, portions of the rotatory reels 2a, 2b and 2c corresponding to the display windows 3a, 3b and 3c are the transparent display units 23a, 23b and 23c which

can transparently display the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c. In other words, the non-transparent region 24 other than the transparent display units 23a, 23b and 23c has the diffusion portion (diffusion sheet) 29 for diffusing light rays emitted from the forward illuminating devices 18a and 18b or the like; on the other hand, the transparent display units 23a, 23b and 23c have no such a diffusion portion (diffusion sheet) 29 (are made transparent or made by cutting out the diffusion portion (diffusion sheet) 29). Further, the transparent display units 23a, 23b and 23c in the liquid crystal display device 16 are made transparent or by cutting out the reflecting plate so that the reflecting plate 21 is prevented from reflecting light emitted from the light sources 22a and 22b.

[0084] In the example shown in Fig. 9, further, the liquid crystal shutter display device 112 is provided between the diffusion portion (diffusion sheet) 29 and the liquid crystal panel 19. The liquid crystal shutter display device 112 has the display shielding units 113a, 113b and 113c. As shown in Figs. 6 and 9, in the liquid crystal shutter display device 112, the display shielding units 113a, 113b and 113c are designed to be located at positions corresponding to the transparent display units 23a, 23b and 23c of

the liquid crystal display device 16 and to have sizes corresponding thereto. In the example of Fig. 9, the display shielding units 113a, 113b and 113c are provided in a part of the liquid crystal shutter display device 112 and have sizes corresponding to the transparent display units 23a, 23b and 23c. However, the liquid crystal shutter display device 112 can have substantially the same size as the transparent display units 23a, 23b and 23c.

[0085] In the example of Fig. 9, the liquid crystal shutter display device 112 is provided between the diffusion portion (diffusion sheet) 29 and the liquid crystal panel 19 in the liquid crystal display device 16. The reason why the liquid crystal shutter display device 112 is provided in such a position is that the liquid crystal shutter display device 112 can sometimes play a role of the diffusion means. In such a case, also due to the liquid crystal shutter display device 112, light from the light sources 22a and 22b, forward illuminating devices 18a and 18b and backlights 17a, 17b and 17c can be regularly guided to the liquid crystal panel 19. Note that the liquid crystal shutter display device 112 may be provided between the diffusion portion (diffusion sheet) 29 and the light guiding plate 20 in the liquid crystal display device 16. Even with such an arrangement, the liquid crystal

shutter display device 112 can play a role of the diffusion means in some cases. The liquid crystal shutter display device 112 further may be provided only between the reflecting plate 21 and light guiding plate 20 in the liquid crystal display device 16. With such an arrangement, sometimes the player is prevented from visibly seeing the display at a backward (deep) position of the reflecting plate 21 when viewed from the player, the situation being preferable. That is, the reason why the liquid crystal shutter display device 112 is disposed at such a position is that the liquid crystal shutter display device 112 may sometimes compensate the role of the reflecting plate, or compensate the role of the light guiding plate. For example, in the case where the display of the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means are shielded by the display shielding units 113a, 113b and 113c of the liquid crystal shutter display device 112, when the entirety of the liquid crystal shutter display device 112 including the display shielding units 113a, 113b and 113c are made white, the player can clearly recognize the effect image of the liquid crystal display device 16 as the second display means in some cases. Furthermore, the liquid crystal shutter display device 112 may be provided both between the liquid

crystal panel 19 and light guiding plate 20 and between the reflecting plate 21 and light guiding plate 20. The liquid crystal shutter display device 112 may be provided to any one or ones of the light guiding plate 20, reflecting plate 21, diffusion portion (diffusion sheet) 29 and liquid crystal panel 19.

[0086] When the liquid crystal shutter display device 112 is turned ON, all light from the backlights 17a, 17b and 17c and from the forward illuminating devices 18a and 18b is shielded in the display shielding units 113a, 113b and 113c, and the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 cannot transparently display the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means. When the liquid crystal shutter display device 112 is turned OFF, on the other hand, all the light from the backlights 17a, 17b and 17c and from the forward illuminating devices 18a and 18b is allowed to transparently pass in the display shielding units 113a, 113b and 113c, and the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 can transparently display the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means. In this connection, the liquid crystal shutter display device

112 is designed capable of turning ON or OFF for each of the display shielding units 113a, 113b and 113c. That is, each of the display shielding units 113a, 113b and 113c is designed to be controllably switched to either a state in which the display of the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c is shielded or a state in which the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c are transparently displayed.

[0087] And when the liquid crystal display device 16 as the second display means gives a predetermined display relating to a game result in a region including the transparent display units 23a, 23b and 23c, a display control device 140 (to be explained later) as the third display means controls the display shielding units 113a, 113b and 113c so that the display of the first display means is shielded to become hardly visible or never visible by a player.

[0088] "ON" of the liquid crystal shutter display device 112 may be any state in which the liquid crystal shutter display device 112 is driven so as not to allow light behind (on the side of the rotatory reels 2a, 2b and 2c) the liquid crystal shutter display device 112 to pass to the front side (player side) of the liquid crystal shutter display device 112. For example, in

the case of a normally white liquid crystal, it refers to a state in which the liquid crystal is driven (a voltage is applied to two glass substrates). On the contrary, "OFF" of the liquid crystal shutter display device 112 may be any state in which the liquid crystal shutter display device 112 is driven so as to allow light behind (on the side of the rotatory reels 2a, 2b and 2c) the liquid crystal shutter display device 112 to pass to the front side (player side) of the liquid crystal shutter display device 112. For example, in the case of a normally white liquid crystal, it refers to a state in which the liquid crystal is not driven (a voltage is not applied to two glass substrates).

[0089]

[Main Control Board and Display Control Device]

Referring to Fig. 10, explanation will be made as to a main control board for controlling the display of the rotatory reels 2a, 2b and 2c, a display control device 50 for controlling a display on the screen of the liquid crystal display device 16, and a display control device 140 for controlling the display of the liquid crystal shutter display device 112. Fig. 10 is a block diagram showing structures of the main control board 60, display control device 50 and display control device 140.

[0090] A control device for controlling the pachi-

slot machine in accordance with the embodiment comprises the main control board 60; the display control device 50 for controlling a display on the screen of the liquid crystal display device 16, sound generation from the speakers 15a and 15b, turning ON and OFF of a lamp 70 and the like under the control of the main control board 60; and the display control device 140 for controlling the display of the liquid crystal shutter display device 112, i.e., the shielding by the display shielding units 113a, 113b and 113c. In this case, the main control board 60 functions as a first display control means, the display control device 50 functions as a second display control means, and the display control device 140 functions as a third display control means.

[0091] As shown in Fig. 10, the display control device 50 is a device controlled by a sub-CPU 51 connected to the main control board 60, and comprises a ROM 52 storing a control program and the like, and a RAM 53 which is a temporal store region. The display control device 50 further comprises a VDP (video processor) 54, a VRAM (video RAM) 55 and a CROM (character ROM) 56 as a section for controlling a display on the screen of the liquid crystal display device 16; and controls the display on the screen of the liquid crystal display device 16 by operating the

VDP 54 under control of the sub-CPU 51. The display control device 50 also comprises, as its section for controlling sound produced from the speakers 15a and 15b, a sound source IC 57 and an SRAM (sound RAM) 58. When the sound source IC 57 is operated under control of the sub-CPU 51, an effect sound or the like is produced from the speakers 15a and 15b. The sub-CPU 51 also controls turning ON and OFF of the lamp 70 and the like. In this connection, the lamp 70 shown in Fig. 10 refers to a general term given to any light source for use in decoration and effect, such as various lamps or LED mounted on a pachi-slot gaming machine.

[0092] As shown in Fig. 10, the display control device 140 includes an ON/OFF control circuit 142 which receives a signal from the sub-CPU 51 to control the ON and OFF control of the liquid crystal shutter display device 112, that is, shielding by the display shielding units 113a, 113b and 113c. When the ON/OFF control circuit 142 causes the liquid crystal shutter display device 112 to be turned ON, in the display shielding units 113a, 113b and 113c, all light emitted from the backlights 17a, 17b and 17c and from the forward illuminating devices 18a and 18b is shielded, so that the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 cannot transparently display symbols drawn on the outer peripheral surfaces

of the rotatory reels 2a, 2b and 2c as the first display means. When the ON/OFF control circuit 142 causes the liquid crystal shutter display device 112 to be turned OFF, on the other hand, in the display shielding units 113a, 113b and 113c, all the light emitted from the backlights 17a, 17b and 17c and from the forward illuminating devices 18a and 18b is allowed to pass therethrough, so that the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 can transparently display the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means.

[0093] The main control board 60 is connected with a motor drive circuit 80 for controlling the rotation of the rotatory reels 2a, 2b and 2c, a rotatory reel position detecting circuit 90 and a rotatory reel stop signal circuit 100.

[0094] The motor drive circuit 80 is a circuit used to control stepping motors 110a, 110b and 110c for driving the rotatory reels 2a, 2b and 2c respectively. The rotatory reel position detecting circuit 90 is a circuit used to detect the rotatory position of the rotatory reels 2a, 2b and 2c. The rotatory reel stop signal circuit 100 is connected with stop switches 8a, 8b and 8c, so that, when the stop switch 8a, 8b or 8c are operated, the rotatory reel stop signal circuit 100

transmits a rotatory reel stop signal to the main control board 60.

[0095] The main control board 60 controls the motor drive circuit 80 and rotation and stoppage of the rotatory reels 2a, 2b and 2c, on the basis of rotatory position of the rotatory reels 2a, 2b and 2c detected by the rotatory reel position detecting circuit 90. And the main control board 60, when receiving the rotatory reel stop signal from the rotatory reel stop signal circuit 100, controls the motor drive circuit 80 and rotatory reel position detecting circuit 90 and stops the rotatory reels 2a, 2b and 2c at their desired positions.

[0096] In this case, the stop control of the rotatory reels 2a, 2b and 2c is carried out based on a predetermined lottery result or based on only the operation of the stop switches 8a, 8b and 8c by the player regardless of the lottery result. Though not shown, the main control board 60 is connected with a plurality of switches or the like for performing various types of control.

[0097] A circuit as the third display control means for driving the liquid crystal shutter display device 112 may be provided on a board separately from the main control board, separately from the display control board, or separately from the main control

board and display control board; or may be provided on the main control board or display control board. In the above case of the separate provision, the load of each control means may be reduced in some cases; on the contrast, in the integral provision case, some electronic components on the board may be commonly used in some cases.

[0098]

[Control Procedure in Display Control Device]

Explanation will be made as to a procedure of operations in an image display process in the display control device 50 with reference to Figs. 11 to 15. Fig. 11 is a flow chart showing a procedure of operations in an image display process in the display control device 50, Fig. 12 is a flow chart showing a procedure of operations in a main interrupt process, Fig. 13 is flow chart showing a procedure of operations in a VDP interrupt process, Fig. 14 is a flow chart showing a procedure of operations in a synchronous interrupt process, and Fig 15 is a flow chart showing a procedure of operations in a timer interrupt process.

[0099] As shown in Fig. 11, in the image display process of the display control device 50, initialization of the sub-CPU 51, RAM 53 and so on is performed (S1), calculation of a check sum for a buffer for backup is performed (S2) and, when the check sum is

incorrect, the backuped buffer is returned (S3). Subsequently, command process is performed (S4) and whether or not the buffer has been completed is judged (S5). When the buffer is not completed, data updating process is performed (S6) and the acquired data is stored as a buffer (S7).

[0100] When the buffer has been completed, whether or not a timer flag is set at ON is judged (S8) and, when the timer flag is set at ON and screen updating gets ready, whether or not a VDP flag is set at ON is judged (S9). If the VDP flag is set at ON to get ready for drawing, then the timer flag and VDP flag are reset (S10 and S11), the buffer is transmitted to the VDP 54 (S13), and then the buffer is cleared (S14). When the timer flag is not set at ON, the process of the step S9 is not executed and, when the VDP flag is not set at ON, processes of the steps S10 to S14 are not executed. Thereafter, a check sum for the buffer is calculated to be backuped (S15), and the process returns to the step S3 to repeat the subsequent processes.

[0101] For the image display process, various sorts of interrupt processes are carried out.

The main interrupt process from the main control board 60 is an interrupt process to transmit a control command to the display control device 50, in which the command is stored (S21) as shown in Fig. 12. In the

case of the pachi-slot machine, since a strobe signal is as relatively long as 20msec, a signal from the main control board 60 may be imported at the command process (S4) in the image display process without performing the main interrupt process.

[0102] The VDP interrupt process is an interrupt process to inform that the VDP 54 gets ready for drawing. As sown in Fig. 13, the VDP flag is set (S31). In the image display control process, judgment process at the step S9 is performed on the basis of the VDP flag.

[0103] The synchronous interrupt process is an interrupt process to control drawing timing on the screen of the liquid crystal display device 16, in which the timer flag is set at intervals of 1,000/60ms (S41) as shown in Fig. 14. In the image display control process, judgment is made in the step S8 on the basis of the timer flag. In the embodiment, an image is drawn and varied at intervals of 1,000/30ms on the display screen of the liquid crystal display device 16. The timer interrupt process is an interrupt process to update the timer by software, in which a counter is updated at intervals of 2ms (S51) as shown in Fig. 15. Note that the timing of the timer interrupt is not limited to 2ms but may be set at a value in a range of 2ms-10ms.

[0104] In the embodiment, as a procedure of display operations in the display control device 140, it is constituted such that, when drawing is carried out including the region of the transparent display units 23a, 23b and 23 in the liquid crystal display device 16, the ON/OFF control circuit 142 is turned ON by receiving a signal from the sub-CPU 51 to shield all light emitted from the backlights 17a, 17b and 17c and from the forward illuminating devices 18a and 18b in the display shielding units 113a, 113b and 113c, thereby the transparent display units 23a, 23b and 23c of the liquid crystal display device 16 being prevented from transparently displaying symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c as the first display means.

[0105] Even when drawing is carried out without containing the region of the transparent display units 23a, 23b and 23c in the liquid crystal display device 16, the liquid crystal shutter display device 112 may be turned ON so that the display shielding units 113a, 113b and 113c cause the symbols drawn on the outer peripheral surfaces of the rotatory reels 2a, 2b and 2c not to be transparently displayed.

[0106]

[Display Examples of Rotatory Reels and Liquid Crystal Display Device]

Explanation will be made in connection with specific display examples of the rotatory reels 2a, 2b and 2c as the first display means and of the display screen of the liquid crystal display device 16 as the second display means, by referring to Fig. 16. Fig. 16 is an explanatory diagram of display examples of the rotatory reels 2a, 2b and 2c and liquid crystal display device 16.

[0107] In Fig. 16, down arrows in the drawing indicate that the rotatory reels 2a, 2b and 2c are rotating and corresponding symbols are changing, the stop switches 8a, 8b and 8c denoted by black circles indicate that the switches are not subjected to their stop operations, and the stop switches 8a, 8b and 8c denoted by white circles indicate that the switches have been subjected to their stop operations.

[0108] The display example of Fig. 16 illustrates a case where, in the pachi-slot machine wherein control of whether or not a winning combination is established is carried out by operational order of the stop switches 8a, 8b and 8c, the operational order of the stop switches 8a, 8b and 8c is informed (so-called push order assist type).

[0109] That is, in the display example of Fig. 16, when a game start condition is established by insertion of a game medal for the game or the like and then the

start switch 7 is operated in a state in which the rotatory reels 2a, 2b and 2c are stopping, then the three rotatory reels 2a, 2b and 2c starts their rotation and a plurality of symbols are variably displayed in the vertical direction (see Fig. 16(a)). At this time, in the main control board 60, a lottery of a winning combination is carried out (a lottery including the operational order of the stop switches 8a, 8b and 8c).

[0110] And when an internal winning as a predetermined winning combination is established, the display shielding units 113a, 113b and 113c of the liquid crystal shutter display device 112 corresponding to the rotatory reels not to be operated next are shielded, and the display shielding units 113a, 113b and 113c corresponding to the rotatory reels to be next operated are not shielded.

[0111] More specifically, assume that it has been decided that the rotatory reels 2a, 2b and 2c will be controlled in such a manner that, when the rotations of the rotatory reel 2b in the middle, the rotatory reel 2c in the right side and the rotatory reel 2a in the left side are stopped in this order, a winning combination internally won is established always or with a high probability. Then the display shielding unit 113b in the middle is not shielded to set the

visibility of the rotatory reel 2b in the middle to be high, the display shielding unit 113a in the left side and the display shielding unit 113c in the right side are shielded to set the visibility of the rotatory reel 2a in the left side and the rotatory reel 2c in the right side to be low (see Fig. 16(b)).

[0112] Subsequently, when the stop switch 8a in the middle is operated, the rotatory reel 2b in the middle is stopped, while the display shielding unit 113c in the right side corresponding to the stop switch 8c to be next operated is not shielded to set the visibility of the rotatory reel 2c in the right side to be high, and the display shielding unit 113a in the left side is shielded to set the visibility of the rotatory reel 2a in the left side to be low (see Fig. 16(c)).

[0113] When the stop switch 8c in the right side is next operated, the rotatory reel 2c in the right side is stopped, and the shielding of the display shielding unit 113a in the left side corresponding to the stop switch 8a to be next operated is released to set the visibility of the rotatory reel 2a in the left side to be high (see Fig. 16(d)).

[0114] And eventually all the display shielding units 113a, 113b and 113c are not shielded, and the stop display of the symbols is carried out with the

high visibility of respective rotatory reels 2a, 2b and 2c (see Fig. 16(e)). In the example of Fig. 16(e), since the three symbols corresponding to the winning combination are stopped and displayed as arranged in a row on a central horizontal line, a predetermined number of game medals are paid out.

[0115] The shielding of each of the display shielding units 113a, 113b and 113c can be arbitrarily set, so long as the display shielding units 113a, 113b and 113c can be identified. That is, in the example of Fig. 16, all the regions of each of the display shielding units 113a, 113b and 113c are set to be shielded. However, only a part of the regions of each of the display shielding units 113a, 113b and 113c may be set to be shielded. Further, when a part of each of the display shielding units 113a, 113b and 113c is shielded, such an arrangement may be also possible that continual picture elements to be shielded and not shielded form a specific letter, figure, character, etc. to specify the display shielding units 113a, 113b or 113c.

[0116] Though different from the explanation of the above display example, it may be arranged such that the above described display is performed not only in the case where the predetermined winning combinations (including special winning combinations such as big

bonus and regular bonus) are internally won but also in the case where the predetermined winning combination has not been won. In this case, the reliability of establishment of the winning combinations can be set to be different by shielding the display shielding units 113a, 113b and 113c to notify. For example, it may be arranged such that, when all the display shielding units 113a, 113b and 113c are shielded, that is, when any of the rotatory reels (2a, 2b, 2c) not to be operated is fully invisibly displayed, a winning combination can be established with a reliability of 100%, and, as the shielding of any of the display shielding units (113a, 113b, 113c) is released, the reliability can be lowered.

[0117] With such an arrangement, player's expectation toward establishment of a winning combination can be enhanced, thus increasing the game amusement. Further, the aforementioned effect display may be arranged to be carried out only when a specific interest state is established. In particular, by performing the above effect display during AT (assist time) (here, AT (assist time) means a time period during which stop operation assist is performed), even an inexperienced player can be avoided from wrongly pushing the stop switches 8a, 8b and 8c in an unintended order, thereby interest justice between game

players can be realized and game amusement can be further enhanced.

[0118] The above effect display may be designed to be carried out according to player's choice. That is, an experienced game player sometimes requires no assist to the pushing order, intentional stopping depending on the visual sense, etc., in which case the aforementioned effect display may be troublesome. On the other hand, an inexperienced player generally wants an assist to the pushing order, intentional stopping, etc. In such a case, by performing the above effect display depending on player's choice, the effect can be given according to player's taste and game amusement can be enhanced. In this case, it is required to provide a selection switch for selecting the necessity or non-necessity of the effect display. The selection switch is not necessarily provided separately but the start switch 7 can be designed so that it also has the function of the selection switch; downward operation of the start switch 7 causes the ordinary game start operation, and upward operation of the start switch 7 causes the operation of the selection switch.

[0119] Further, the above effect display may be carried out over a plurality of times of game. For example, the period during which the effect display is provided may be a so-called morning service period when

a door of a game shop is opened, a period from winning of a small symbol combination until a predetermined number of times of the game are ended, a period from winning of a replay game until a predetermined number of times of the game are ended, a period from winning of a free game until a predetermined number of times of the game are ended, a period of a high-probability replay lottery game, a big bonus period, a regular bonus period, single bonus period, a challenge time period, or the like.

[0120] As explained above, the pachi-slot machine of the embodiment comprises the transparent display units 23a, 23b and 23c and the display shielding units 113a, 113b and 113c by a plural number (three) respectively. With such a configuration, a plurality of display states can be employed in the transparent display unit, further, a predetermined display state can be selected from a plurality of display states under predetermined conditions including a random number lottery, and various displays can be realized depending on a stage of the game or in identical or similar stages. For this reason, the display can be avoided from becoming one pattern which makes the player feel monotonous. Thus effects rich in varieties can be realized.

[0121] When the liquid crystal display device 16

as the second display means gives a predetermined display relating to a game result in the region including the transparent display units 23a, 23b and 23c, the control device having an ON/OFF control circuit, etc. as the third display means and a control program thereof are designed so that the display shielding units 113a, 113b and 113c cause the player to hardly visibly or not to visibly see the display of the rotatory reels 2a, 2b and 2c as the second display means. With such a configuration, since an identical, similar or different display states can be selected in the plurality of transparent display units, the display can be avoided from becoming one pattern which makes the player feel monotonous, and thus effects rich in varieties can be realized.

[0122] Since a transparent display unit which is to be especially visibly seen by the player, or a first display section, can be expressed with a different display state, depth can be added to the game. For example, when there are a transparent display unit for displaying a predetermined symbol and a transparent display unit having no display symbol, the player sometimes closely observe only one of the transparent display units. When applied to such a situation, excellent effects can be exhibited.

[0123] Further, since the first display section

intended to cause the player to especially observe it can be expressed with different display states, depth can be added to the game. For example, when a shielded first display section and a not-shielded first display section are present, the player tends to closely observe only one of such display sections. When applied to such a situation, excellent effects can be exhibited.

[0124] The predetermined displays relating to the game result include a game result itself, a form of announcing the probability that a predetermined winning combination or a specific winning combination has been determined is possible or high to the player, a form of announcing a miss, a form of notifying that a predetermined or specific winning combination has been determined to the player, and a form of notifying that a predetermined or specific winning combination has not been determined to the player. The forms include one or a plurality of symbol (motion/still) images, one or a plurality of character (motion/still) images, one or a plurality of background (motion/still) images, one or a plurality of balloon (motion/still) images, one or a plurality of letter or figures, predetermined actions, etc. of one or a plurality of movable matters, one or a plurality of lamp ONs/OFFs, or one or a plurality of speaker sounds.

[0125] In the foregoing embodiment, although the transparent display unit and display shielding unit have been provided for each of the rotatory reels for rotatingly displaying a plurality of symbols, the invention is not limited to the embodiment. For example, with regard to the third display means, a single display shielding unit may be provided for a single, a plurality of or all of the plurality of rotatory reels for rotatingly displaying the plurality of symbols (plural variable display units). The entire third display means may form the display shielding unit. The size of the display shielding unit may be varied.

[0126] Further, the display shielding unit may be any unit so long as it can shield the display of the first display means, including a unit having no liquid crystal section and provided only with a material having a shieldable property (opaque glass, opaque resin, etc.). In addition, the third display means may be provided in front of or on the front side of the second display means. In this case, it goes without saying that a reflection type liquid crystal display device is required to be employed as the second display means.

[0127] An opaque region for blocking the visible observation of the display means provided on the back side of the second display means when viewed from the

front side of the gaming machine may be provided in the second display means, a display window may be provided around a region including the transparent display unit and the opaque region, or the display window may be provided inside of the contour of the transparent display unit.

[0128] The display window is sufficient to indicate a notification thereon, meaning that, when player's eye is directed to the inside of the display window, the player can see the display of the display means provided in the back side of the second display means in some cases. At least a part or whole of the display window may be provided to the transparent display unit, and the light transparent property of at least a part or whole of the display window provided to the transparent display unit may be arranged for variable display (temporarily, at least a part or whole of the display window provided to the transparent display unit will be referred to as a specific display window). The specific display window may be designed to be capable of giving a variable display such as magnification, reduction or shape change.

[0129] Further, such an arrangement may be employed that the display of a plurality of variable display forms are can be controlled; one or more of variable display forms are selected from the plurality

of variable display forms according to the winning combination selected by the winning combination deciding means, the winning combination hit but not won yet, the number of the winning combinations not won yet, or random number lottery; and the specific display window is variably displayed based on the selected variable display form. In this case, the player can visibly observe the first display means by various specific display windows themselves or through the specific display windows. In this way, various effect displays can be realized, which leads to improved game playability. With respect to the variable display of the specific display window, even the light transparent property (a degree of easy-to-see of the first display means) may be varied.

[0130] Further, an identical light transparent property may be given to the entire specific display window, or a plurality of steps of light transparent properties may be given thereto. More in detail, the specific display window is arranged to have a high light transparent property (enabling easy observation of the first display means) nearly in the center thereof and, as it goes away from the center, the specific display window is arranged to have lower light transparent properties (enabling hard observation of the first display means). In such a case also, various

effect displays can be realized.

[0131] The light transparent property of the specific display window may be varied in a time series manner. In this case, the varying rate of the light transparent property may also be varied. As a result, deeper effects can be added to the game.

[0132] The light transparent property of the specific display window may be varied depending on the winning combination selected by the winning combination determination means, the winning combination hit but not won yet, or a random number lottery. Further, nearly at the same time the location and size of it may be varied. With it, the player can expect generation of an interest state and can observe the variable display of the specific display window, thus enhancing both the effect and playability.

[0133] The display window may be changeably arranged so that the display can be performed around the transparent display unit changed as associated with a change in the size, magnification, reduction, movement, number or contour shape of the transparent display unit. Such an arrangement allows the play to expect that he could visibly observe the first display region through the transparent display unit when his eyes are directed toward the display window. Thereby various effect displays can be realized. Further, this

can be also utilized for guiding player's eyes also to contribute to an enhancement in the game performance.

The display window may be allowed not to display around the transparent display unit in some cases. A specific example of the case is when the above is utilized for a so-called assist game, in which the first display means may be controlled so that, the winning combination determination means determines an internal winning combination on the basis of a plurality of stop switches, a plurality of display windows corresponding in number to the stop switches, and the output of the game start command means, and that the internal winning combination is won when the operational sequence of stop buttons previously set by the control means of the gaming machine prior to the operation by a player coincides with the player's operational sequence of the stop buttons; and the display forms of the plurality of display windows may be varied in an order corresponding to the operational sequence of the plural stop buttons previously determined by the control means of the gaming machine.

[0134] In this case, when the player operates the stop switches corresponding to the display windows changed in the display form, the internal winning combination can be obtained inevitably or with a high probability, thus leading to contribution to the easily

understandable game and enhanced game performance.

[0135] The transparent display unit is sufficient so long as the first display means can be visibly seen via the region. The transparent display unit may be arranged to be capable of variably displaying the magnification, reduction, shape change, etc.

[0136] Such an arrangement is also possible that a plurality of variable display forms are arranged to be controllably displayed; one or more of the plurality of variable display forms are selected from the plurality of variable display forms according to the winning combination determined by the winning combination determination means or the winning combination hit but not won yet, the number of winning combinations not won yet, or a random number lottery, and that the transparent display unit is variably displayed based on the selected variable display form. In this case, the player can visibly observe various transparent display units themselves or the first display means via the transparent display units. In this way, various effect displays can be realized and the game performance can be correspondingly enhanced.

[0137] With regard to the variable display of the transparent display unit, the light transparent property (a degree of easy observation of the first display means) of it may also be varied. Further, an

identical light transparent property may be given to all over the transparent display unit, or a plurality of steps of light transparent properties may be given. More specifically, a high light transparent property (a high degree of ease in the observation of the first display means) may be given to nearly the center of the transparent display unit and, as it goes away from the center, lower light transparent properties (lower degrees of ease in the observation of the first display means) may be given. Even in this case, various effect displays can be realized.

[0138] Such an arrangement is also possible as to change the light transparent property of the transparent display unit in a time series manner. In this case, deeper effects can be added to the game.

[0139] It is also possible to change the light transparent property of the transparent display unit depending on the winning combination selected by the winning combination determination means, the winning combination hit but not won yet, a random number lottery or the like. Further, nearly at the same time the location and size of it may be varied. With it, the player can expect generation of an interest state and can observe the variable display of the specific display window, thus enhancing both the effect and playability.

[0140] The variable display of the transparent display unit may be linked with the shielded display of the display shielding unit. For example, when the transparent properties of the transparent display unit is low (the first display means is less visible), the display shielding unit may be arranged to shield the first display means; and when transparent properties of the transparent display unit is high (the first display means is more visible), the display shielding unit may be arranged to shield the first display means. In any case, it is only required that the display of the first or second display means becomes more visible to the player, or the display shielding unit be driven according to the game progress.

[0141] Although embodiments of the invention have been explained, they are given merely as a concrete example and the invention is not limited particularly to them. That is, the invention is characterized in that the display shielding unit can be controllably switched to either of the state wherein the display of the first display means is shielded or the state wherein the display of the first display means is transparently displayed. The specific structure of each means including the game result display means and the first to third display means may be suitably modified.

[0142] The gaming machine in accordance with the invention comprises a game result display means for performing a predetermined display about the game result, a game value providing means for providing a game value advantageous to a player when the predetermined game result is displayed on the game result display means, and a display control means for performing display control over the game result display means. The game result display means has a first display means, a second display means disposed on the player side of the first display means when the gaming machine is viewed from its front side, a third display means disposed on the player side of the first display means when the gaming machine is viewed from its front side, a transparent display unit capable of transparently displaying the display of the first display means on the second display means and a display shielding unit for shielding the display of the first display means from the third display means. Since the display shielding unit can be controllably switched to either the state wherein the display of the first display means is shielded or the state wherein the display of the first display means is transparently displayed, the display of the first display means and the display of the second display means are allowed to be clearly visible to a player, the state being highly

preferable. Further, when it is desired to cause the player to strongly recognize either the display of the first display means or the display of the second display means, an effect display or the like to be recognized strongly by the player can be made clearly visible in some cases, the state being highly suitable.

[0143] In the gaming machine in accordance with the invention, since the display shielding unit in the third display means is provided at a position corresponding to the transparent display unit in the second display means, the display of the first display means and the display of the second display means can be made reliably visible to the player, the state being highly suitable. When the display shielding unit is provided only at the position corresponding to the transparent display unit, the surface area of the display shielding unit can sometimes be decreased, resulting in expectation of various advantage such as cost reduction, or reduction of load of the control system by decreasing time period necessary for switching control. Of course, though it is suitable that the display shielding unit is provided only at the position exactly corresponding to the transparent display unit when the gaming machine is viewed from its front side, the display shielding unit may be provided only at the position approximately corresponding to the

transparent display unit when the gaming machine is viewed from its front side, upon the condition that aforementioned advantages are obtained even if there exists some gaps due to design restrictions.

[0144] Similarly, the display shielding unit also can suitably have exactly the same size as the transparent display unit as mentioned above. However, even when the sizes are somewhat different due to design restrictions, the display shielding unit may have approximately the same size as the transparent display unit, upon the condition that aforementioned advantages are obtained.

[0145] In the gaming machine of the invention, in addition, the transparent display unit in the second display means and the display shielding unit in the third display means are provided respectively by a plural number. Thus, when the location which can prompt the player to focus on is provided by a plural number, various effect displays can be realized and can prompt the player to do some action (to turn his eyes and so on), which may increase his interest in it. In this connection, the word "plural" means that a plurality of display shielding units may be provided for the single third display means or a plurality of separated display shielding units may form the third display means.

[0146] In the gaming machine of the invention, further, the second display means and the third display means are integrally provided. Thus, when the exchanging work is required as upon fault generation, the exchange can be conducted in the form of a unit and therefore the maintenance may be highly improved. Of course, the similar work can be simplified even upon assembly in some cases. Furthermore, the integral arrangement may produce a cost advantage, which is highly desirable.

[0147] In the gaming machine of the invention, furthermore, when the predetermined display relating to the game result is given in the region including the transparent display unit of the second display means, the third display control means for controlling the display of the third display means is controlled so that the display shielding unit causes the player to hardly view or not to view the display of the first display means. Thus, the player can be prevented with a high probability from observing the predetermined display about the game result and the display behind it as overlapped, which may allow the player to view the predetermined display about the game result.

[0148] The operation and working-effect explained in the embodiment of the invention have been given merely as the most suitable exemplary operation and

working-effect caused by the invention, and the operation and working-effect of the invention is not restricted to those explained in the embodiment of the invention.

[0149] The gaming machine in accordance with the invention comprises a game result display means for performing a predetermined display about the game result, a game value providing means for providing a game value advantageous to a player when the predetermined game result is displayed on the game result display means, and a display control means for performing display control over the game result display means. The game result display means has a first display means, a second display means disposed on the player side of the first display means when the gaming machine is viewed from its front side, a third display means disposed on the player side of the first display means when the gaming machine is viewed from its front side, a transparent display unit capable of transparently displaying the display of the first display means on the second display means and a display shielding unit for shielding the display of the first display means from the third display means. Since the display shielding unit can be controllably switched to either the state wherein the display of the first display means is shielded or the state wherein the

display of the first display means is transparently displayed, an interesting effect display rich in idea can be realized.

[0150] Although only some exemplary embodiments of this invention have been described in detail above, those skilled in the art will readily appreciated that many modifications are possible in the exemplary embodiments without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention.

[0151] This application is related to co-pending U.S. patent applications entitled "GAMING MACHINE" referred to as Attorney Docket No. SHO-0019, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0020, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0021, "GAMING MACHINE" referred to as Attorney Docket No, SHO-0022, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0023, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0024, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0025, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0026, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0027, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0028, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0029, "GAMING MACHINE" referred

to as Attorney Docket No. SHO-0030, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0031, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0032, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0033, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0034, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0035, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0036, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0037, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0038, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0039, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0040, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0041, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0042, "GAMING MACHINE" referred to as Attorney Docket No. SH0-0043, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0044, "GAMING MACHINE" referred to as Attorney Docket No, SHO-0045, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0046, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0047, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0048, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0049, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0050, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0051, "GAMING MACHINE" referred to as Attorney

Docket No. SHO-0052, "MOTOR STOP CONTROL DEVICE" referred to as Attorney Docket No. SHO-0053, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0054, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0055, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0056 and "GAMING MACHINE" referred to as Attorney Docket No. SHO-0057, respectively, all the applications being filed on October 31, 2003 herewith. The co-pending applications including specifications, drawings and claims are expressly incorporated herein by reference in their entirety.